

**AMENDMENTS TO THE CLAIMS:**

1. (Currently amended) A band gap circuit for generating an output voltage to be outputted from a circuit output terminal, which is connected to a power supply voltage source and a reference potential point, said band gap circuit comprising:

a differential amplifier having an inverting input terminal, a noninverting input terminal, and an output terminal;

a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal;~~and~~

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of the potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal and said reference potential point and being directly connected to said output terminal of said differential amplifier;and

a first element having a resistive component and a second element having a capacitive component, said first and second elements being connected to remove power supply noise in the power supply voltage.

wherein said second element comprises an ion implantation resistor.

2. (Canceled)

3. (Currently amended) The band gap circuit according to claim-21, wherein said first

Serial No. 10/647,468  
Docket No. 2002-249352US  
UDA.022

element comprises a transistor.

4. (Canceled)

5. (Currently amended) A band gap circuit for generating an output voltage to be outputted from a circuit output terminal, which is connected to a power supply voltage source and a reference potential point, said band gap circuit comprising:

a differential amplifier having an inverting input terminal, a noninverting input terminal, and an output terminal;

a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal;

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of the potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential amplifier,

a first element having a resistive component, said first element being connected to said power supply voltage and said circuit output terminal; and

a second element having a capacitive component, said second element being connected to said first element,

wherein said second element comprises an ion implantation resistor.

6. (Previously presented) The band gap circuit according to claim 5, wherein said first element comprises a transistor.
7. (Canceled)
8. (Previously presented) The band gap circuit according to claim 1, wherein said switching element comprises a N-channel MOS transistor.
9. (Previously presented) The band gap circuit according to claim 5, wherein said switching element comprises a N-channel MOS transistor.
10. (Currently amended) A band gap circuit, comprising:
  - a voltage supply circuit adapted to be connected to a power supply voltage source;
  - a reference potential point;
  - a circuit output terminal connected to said voltage supply circuit;
  - a differential amplifier connected to said voltage supply circuit and having an inverting input terminal, a noninverting input terminal, and an output terminal;
  - a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal; and
  - a switching element for causing excess current from said circuit output terminal to

flow to said reference potential point in response to fluctuation of the potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential amplifier,

wherein said voltage supply circuit comprises a constant current source, a first transistor coupling said differential amplifier to the power supply voltage source and said constant current source, and a second transistor coupling said circuit output terminal to the power supply voltage source and said constant current source.

11. (Canceled)

12. (Previously presented) ~~A The band gap circuit according to claim 10, comprising;~~  
a voltage supply circuit adapted to be connected to a power supply voltage source;  
a reference potential point;  
a circuit output terminal connected to said voltage supply circuit;  
a differential amplifier connected to said voltage supply circuit and having an inverting input terminal, a noninverting input terminal, and an output terminal;  
a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal; and  
a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of the potential at said output

terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential amplifier,

\_\_\_\_\_ wherein said voltage supply circuit comprises a constant current source, a first pair of cascaded transistors coupling said differential amplifier to the power supply voltage source and said constant current source, and a second pair of cascaded transistors coupling said circuit output terminal to the power supply voltage source and said constant current source.

13. (Previously presented) The band gap circuit according to claim 10, further comprising a first element having a resistive component and a second element having a capacitive component, said first and second elements being connected to remove power supply noise in the power supply voltage.

14. (Previously presented) The band gap circuit according to claim 13, wherein said first element comprises a transistor.

15. (Previously presented) The band gap circuit according to claim 13, wherein said second element comprises an ion implantation resistor.

16. (Previously presented) The band gap circuit according to claim 10, wherein said switching element comprises a N-channel MOS transistor.

17. (Currently amended) A band gap circuit, comprising:

a voltage supply circuit adapted to be connected to a power supply voltage source;

a reference potential point;

a circuit output terminal connected to said voltage supply circuit;

a differential amplifier connected to said voltage supply circuit and having an inverting input terminal, a noninverting input terminal, and an output terminal;

a first circuit for causing a potential difference to occur at said inverting input terminal and said noninverting input terminal in response to fluctuation of the voltage on said circuit output terminal;

a switching element for causing excess current from said circuit output terminal to flow to said reference potential point in response to fluctuation of the potential at said output terminal of said differential amplifier, said switching element being connected to said circuit output terminal, said reference potential point, and said output terminal of said differential amplifier,

a first element having a resistive component, said first element being connected to said power supply voltage and said circuit output terminal; and

a second element having a capacitive component, said second element being connected to said first element,

wherein said voltage supply circuit comprises a constant current source, a first transistor coupling said differential amplifier to the power supply voltage source and said constant current source, and a second transistor coupling said circuit output terminal to the power supply voltage source and said constant current source.

18. (Canceled)

19. (Currently amended) A The band gap circuit according to claim 17, comprising:  
a voltage supply circuit adapted to be connected to a power supply voltage source;  
a reference potential point;  
a circuit output terminal connected to said voltage supply circuit;  
a differential amplifier connected to said voltage supply circuit and having an  
inverting input terminal, a noninverting input terminal, and an output terminal;  
a first circuit for causing a potential difference to occur at said inverting input  
terminal and said noninverting input terminal in response to fluctuation of the voltage on  
said circuit output terminal;  
a switching element for causing excess current from said circuit output terminal to  
flow to said reference potential point in response to fluctuation of the potential at said output  
terminal of said differential amplifier, said switching element being connected to said circuit  
output terminal, said reference potential point, and said output terminal of said differential  
amplifier,  
a first element having a resistive component, said first element being connected to  
said power supply voltage and said circuit output terminal; and  
a second element having a capacitive component, said second element being connected to  
said first element,  
wherein said voltage supply circuit comprises a constant current source, a first pair of

Serial No. 10/647,468  
Docket No. 2002-249352US  
UDA.022

cascaded transistors coupling said differential amplifier to the power supply voltage source and said constant current source, and a second pair of cascaded transistors coupling said circuit output terminal to the power supply voltage source and said constant current source.

20. (Previously presented) The band gap circuit according to claim 17, wherein said first element comprises a transistor.

21. (Previously presented) The band gap circuit according to claim 17, wherein said second element comprises an ion implantation resistor.

22. (Previously presented) The band gap circuit according to claim 17, wherein said switching element comprises a N-channel MOS transistor.

23. (New) The band gap circuit according to claim 12, further comprising a first element having a resistive component and a second element having a capacitive component, said first and second elements being connected to remove power supply noise in the power supply voltage.

24. (New) The band gap circuit according to claim 23, wherein said first element comprises a transistor.

25. (New) The band gap circuit according to claim 23, wherein said second element



Serial No. 10/647,468  
Docket No. 2002-249352US  
UDA.022

comprises an ion implantation resistor.

26. (New) The band gap circuit according to claim 12, wherein said switching element comprises a N-channel MOS transistor.

27. (New) The band gap circuit according to claim 19, wherein said first element comprises a transistor.

28. (New) The band gap circuit according to claim 19, wherein said second element comprises an ion implantation resistor.

29. (New) The band gap circuit according to claim 19, wherein said switching element comprises a N-channel MOS transistor.